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ABSTRACT

The methodology of using a mixed qualitative and quantitative research design to evaluate 14 "inclusive" preschool programs in a continuing study is detailed. The qualitative approach was used to understand the general phenomenon and integrated with more quantitative, structured, and precise measures in an iterative, sequential process to develop expanded data collection activities and expand data interpretation. At each site, five children with disabilities, two typically developing peers, the children's families, direct service providers, and administrators and policy makers were involved in the study. The qualitative phase involved participant observation, semi-structured interviews, and document analysis. Quantitative measures encompassed survey questionnaires and measures of child behavior, friendship patterns, and the educational context. The process of data reduction, comparison, and integration for both qualitative and quantitative phases is detailed. Systematic comparison of information from interviews and survey data is illustrated in a table. Comparison involved the following themes: (1) how and why the child was placed in the program; (2) the program's appropriateness for the child; (3) the meaning of inclusion; (4) peer relationships; (5) helpful and non-helpful players; and (6) the child's participation in family and community activities. (DB)

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Making the Whole More Than the Sum of the Parts: Challenges in a Mixed Method Study of Inclusion

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Making the Whole More Than the Sum of the Parts: Challenges in a Mixed Method Study of Inclusion (aera97#2.doc; 2/27/97)

Recent practice has seen increased use of mixed method research designs that capitalize on the strengths of qualitative and quantitative methods. While considerable theoretical development about the purposes and analysis of mixed method designs has occurred (Caracelli & Greene, 1993; Cook & Reichardt, 1979; Greene, Caracelli, & Graham, 1989; Shotland & Mark, 1987; Smith & Louis, 1982), many conceptual, technical, and practical issues remain in the implementation of these designs. The purpose of this paper is to describe methodological issues in the collection and analysis of extensive quantitative and qualitative data in a national cross-site study of preschool inclusion.

Although much has been written about theoretical and paradigmatic issues in mixed method designs, there is a gap in the literature about practical issues in analyzing and interpreting data in these designs. This paper attempts to fill that gap in that it focuses on those practical aspects in analysis and interpretation from a complex and rich data set. We discuss how multiple methods were combined in separate classroom and family studies to illustrate the principles of triangulation, development, complementarity, and expansion, as defined in the framework for mixed method designs proposed by Greene et al. (1989). Further, the paper will discuss issues confronted in integrating data from the different data sources and offer practical suggestions for analysis strategies.

Overview of Research Institute

The Early Childhood Research Institute on Inclusion (ECRII) is funded to conduct a five-year research program on issues related to the inclusion of preschool-aged children (ages 3 through 5) with disabilities in education and child care settings with typically developing peers. The cluster of research studies conducted by the institute are designed to examine barriers to inclusion as well as to identify and design strategies for overcoming those barriers and supporting inclusion. The research addresses five content areas: (a) ecological analysis of inclusion, (b) classroom intervention and professional collaboration, (c) family perspectives and community inclusion, (d) social policy, and (e) action research and knowledge utilization.

This five-year institute is a multi-site effort of research investigators from five universities (San Francisco State University, Vanderbilt University, University of Maryland, University of North Carolina, University of Washington). This national, cross-site approach assumes that inclusion can be understood only by examining the many contexts in which children and their families participate. Thus, the ecological systems model articulated by Bronfenbrenner (1979) provides the guiding framework for this inquiry. Based on this conceptual model, the investigators have studied preschoolers within their classrooms, homes and community programs (microsystem level), the relationships between families and program professionals and among professionals across programs and settings (mesosystem level), the program administrative structures and policies and contexts for inclusion (exosystem level), and the larger socio-political/cultural contexts for inclusion (macrosystem level).

Method

In order to understand the definitional constructs and contexts of inclusion both qualitative and quantitative measures were employed in this investigation. The investigation was structured such that the qualitative approach was used to understand the general phenomenon and from that understanding more quantitative, structured, and precise measures of aspects of child behavior and educational context were derived. These quantitative measures, then in turn, informed the investigators of areas where additional in-depth conceptual understanding was needed using a more qualitative approach.

For a common conceptual framework, we believe it is useful to review here the five mixed methods purposes proposed by Greene et al. (1989):
(1) Triangulation: seeks convergence, corroboration, or correspondence of results from the different methods;
(2) Complementarity: seeks elaboration, illustration, or clarification of results from one method with the results of the other;
(qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon.)
(3) Development: uses the results from one method to help develop or inform the other method;
(4) Initiation: seeks the discovery of paradox and contradictions, new perspectives or frameworks, or the recasting of questions or results from one method with questions or results from the other; and
(5) Expansion: extends the breadth and range of inquiry by using different methods for different inquiry components.
We will provide examples of how multiple methods were used for these different purposes in classroom and family studies described later in the paper.

Sampling

Program selection. Data for the ecological systems study were collected from four university sites located around the United States. At each site, investigators selected 4 preschool programs within their area that were nominated by key informants as programs that were "inclusive." Thus, a total of 16 preschool programs were involved in this in-depth study. Purposive sampling was employed in order that the sample represented the range of inclusive options and models, and the range and diversity of children and families in this country. Programs were operated by a number of different organizational systems including public schools, Head Start, and child care organizations, and they represented a range of service delivery models.

Subject selection. Within each preschool program, 7 children were selected purposively for this study; five children were disabled and had an Individualized Education Program (IEP) and 2 were typically developing peers who attended the same

classes. In addition, the children's families, direct service providers (e.g., teachers, paraprofessionals, related service providers), and the administrators and policy makers for these programs were studied. A total of 112 children and their families across these sites were included in this investigation.

Measures

The primary strategies employed in the qualitative approach were participant observation, semi-structured interviews, and document analysis. These strategies provided an insider or emic perspective in that the perspectives of the individuals involved in the inclusion process were examined through first-hand experience. Investigators served as participant observers in children's classrooms examining children's participation with peers and service providers, contacts between family members and professionals, and the relationships among and between participants at all levels of the system. Post-CASPER notes were taken following the CASPER structured observation sessions (see the next paragraph) to supplement the quantitative data obtained. A friendship survey regarding children's friendship patterns at school and in the community was completed by both teachers and parents. Semi-structured interviews also were conducted with family members, direct service providers, administrators, and policy makers. In addition, key documents were collected and analyzed.

Quantitative measures encompassed a number of measures of child behavior, friendship patterns, and contextual variables. More specifically these measures included the CASPER (Code for Active Student Participation and Engagement-Revised), a direct observation in the classroom of group arrangement, group composition, type of activity, activity initiation, child behavior, child's social behavior, and teacher behavior. Further, a sociometric assessment, the Peer Rating Assessment, was administered to children. The Battelle Developmental Inventory was administered to all children to establish children's developmental level. In addition, a survey of classroom activities that gathered information regarding modifications for children's special needs was conducted. Finally, a questionnaire survey measure of family perception of inclusion experiences was developed and data were collected through a semi-structured telephone interview.

The qualitative and quantitative measures used are separated into classroom and family domains as shown in Table 1. The rest of this paper focuses on information from two different types of ECRII studies: one study measured the child's participation and social relationships in the classroom, while the other study focused on parents' perceptions of the child's inclusive program, family supports, as well as the child's social relationships and participation in activities outside the classroom. For each study, we present information on specific measures used and discuss issues in analyzing and interpreting the qualitative and quantitative data collected.

Table 1. Classroom and Family Measures in the Ecological Systems Study

Qualitative Measures	Quantitative Measures
Classroom: --Participant observation* --Post-CASPER notes* --Teacher friendship survey* --Interviews with teachers and other service providers* --Document analysis	Classroom: --CASPER (Code for Active Student Participation and Engagement-Revised)* --Peer Rating Sociometric Assessment* --Battelle Developmental Inventory --Curriculum Activities Survey
Family: --Face-to-face interviews* --Family friendship survey	Family: --Telephone survey*

Note: Only the asterisked measures are discussed in this rest of this paper.

Classroom Studies Example

In this section we describe the analytic procedures we used for the quantitative measures of child participation (CASPER) and social relationships (peer rating), and the qualitative data collected as field notes from participant observation in the classroom, post-CASPER notes, the teacher friendship survey, and from teacher interviews.

Data Analysis

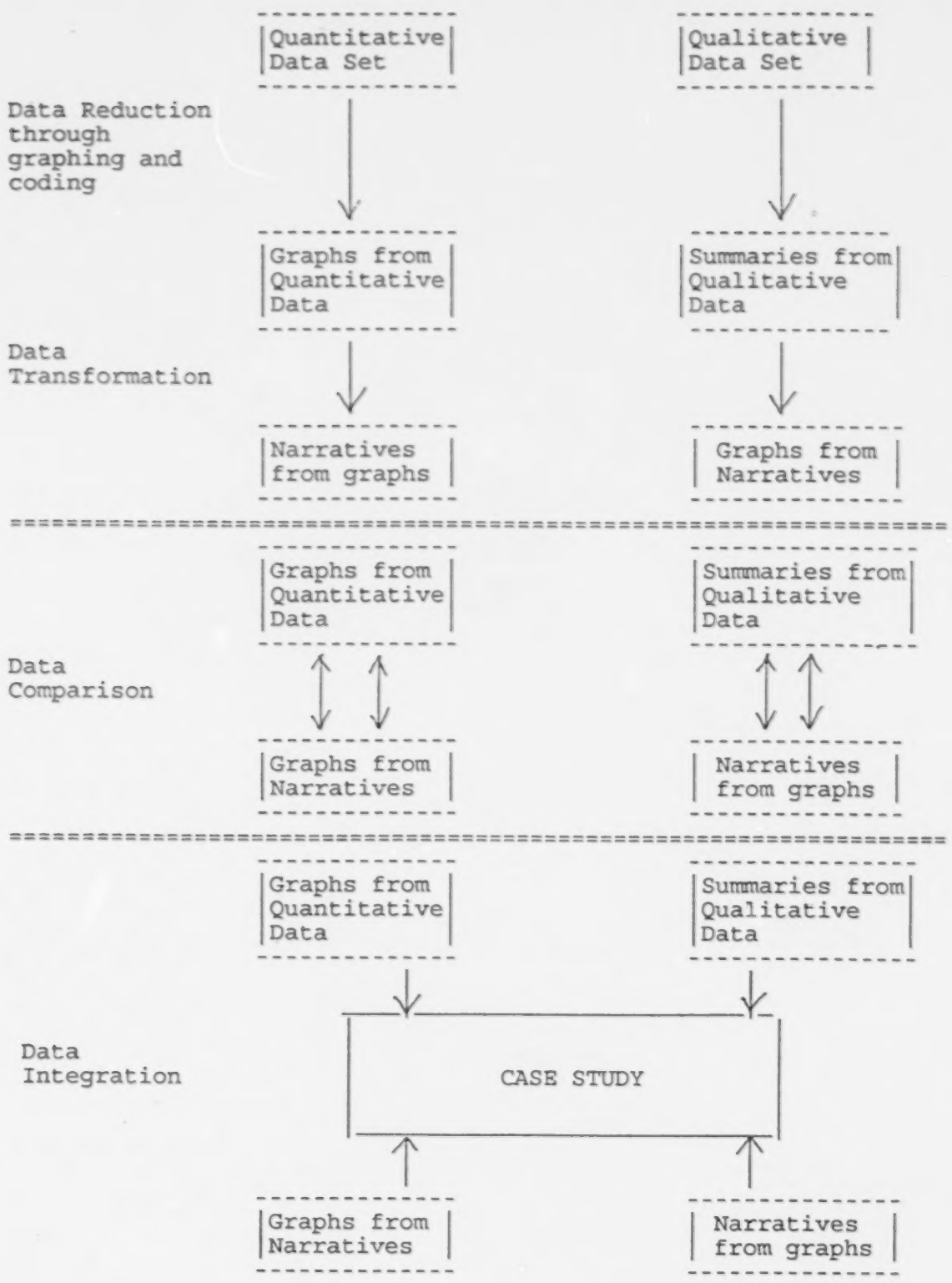
The general framework for analysis and integration of the quantitative and qualitative classroom data is presented in Figure 1. For each data type, we proceeded through these steps: (1) data reduction through graphing and coding, (2) data transformation, (3) comparison of summarized data of both types, and (4) integration of the data into a case study report. Each step is described in more detail below. The data presented for illustration are based on a small, purposive sample of 7 children from one inclusive program.

[Insert Figure 1 here]

Data Reduction

To manage this large body of data, the first step we took was to go through a data reduction process in which the quantitative data are displayed in tables and graphs and the qualitative data summarized. Our quantitative data consists of two sets. One is 6 half-hour time sampling of CASPER data for each of the 7 children in the program. The

Figure 1. Analytic Framework for Classroom Data



other is a peer rating scale that ranks the popularity of each child in relation to others in the same class. For the CASPER data, we initially ran a quick frequency tabulation by each of the seven categories (e.g., group arrangement, activity initiation, child's social behavior, teacher behavior, etc.) and produced a series of graphs displaying the corresponding data. We also collapsed the data for typically developing children and children with disabilities in order to investigate the possible differences between the two groups.

For the peer rating scale data, we generated two types of graphs. The first is a frequency distribution of the average scores for all the children in the class. The other is a display of all the scores a child received. Graphing the quantitative data allows us to examine the data visually and detect any apparent patterns and irregularities in the initial stage of data analysis.

We went through a similar data reduction process for the qualitative data. For the Post-CASPER observation notes, we used a pre-designed form to highlight the key findings from 6 CASPER observations for each child on a single sheet. Findings from the teacher's friendship survey were reduced to a paragraph length summary.

Observation fieldnotes and teacher interview transcripts were entered into the Ethnograph 4.0, a computer program designed for the analysis of textual data. Each investigator then read through the computer printouts of fieldnotes and interviews and came up with emerging themes. The data were then coded according to a set of thematic categories agreed upon by the site team of researchers. Some of these categories, such as adult support and child social behavior, actually reflect the same categories in the quantitative measure of CASPER. In other words, the two methods shared some of the investigative focus.

After all the text data were coded, the computer program was used to search through the entire database for the segments coded under the same thematic category, sort them out by child and print out the results. On the basis of these printouts, we wrote child case summaries regarding his or her participation, peer relationships, adult support, and so on.

Data Transformation

To pave the way for data comparison and integration, data reduction was performed at a higher level when some of the qualitative data were transformed into a quantitative format and vice versa.

The post-CASPER observation notes were originally designed to be part of our qualitative data set. They contained specific examples of what the observer saw about a child's positive and negative behaviors and the child's role in adult and peer interactions. During the first phase of data reduction, the post-CASPER form had already been reduced from six sheets to one sheet. During the data transformation stage, we reduced

the summary further into some quantifiable data. For instance, we made a graph indicating the percentage of positive social interactions among a child's total recorded positive behaviors. We also computed the percentage a child was marked to "blend in," "stick out," or "stand out." These numerical versions of the qualitative data made it easier to make visual comparisons between the qualitative and quantitative data sets.

Another data transformation strategy for qualitative data was to compute the total number of lines a certain coded segment takes. For instance, in one program, we found that the teachers were very fond of one child with disabilities. They talked about her without our prompting them. The very fact that they spent a lot of time talking about this child suggested to us the special role she played.

Data transformation for quantitative data took the form of written narratives that summarized the most salient points in tables or graphs. For instance, when the CASPER data was graphed, only the part that seemed to tell a child apart from the others was put into narratives.

Data Comparison

The next step in our data analysis was to compare the data from the two sources. By now, our data sets have taken on a new form as the result of the data reduction process. We have two sets of graphs, one from the quantitative data, and the other from the qualitative data. The same thing is true for the two sets of summaries, one was based on coded observation notes and teacher interviews, and the other represented the most salient points from reading the graphs. Data comparison was done between the two sets of graphs and summaries for the purposes of triangulation, complementarity and initiation.

Triangulation. One of the benefits of using a mixed method design is that research findings get triangulated across multiple data types and sources. As we compared the graphs and summaries, we found a lot of convergence and corroboration in our data set. For instance, a precursor to the understanding of barriers to inclusion is to develop a detailed profile for each participating child. Ideally this profile would include a portrait of what a typical day was like for a child, how s/he interacted with peers and adults, and when s/he encountered difficulties. As we worked on this kind of child profile, we tried to make sure that the portrait that we painted for each child was accurate and meaningful. We did this by checking whether the data from two different sources and types gave the same description.

For instance, Mary is a girl with mental retardation. But that did not prevent her from becoming the most sociable child in an inclusive program of 30 children. Her gregarious nature was evident in both of the following two summary excerpts.

> The CASPER results indicate that Mary is the most sociable and active child among the seven children observed. She interacted positively with adults for 9.2% of the time (the highest number of all 7 children), while the average rate for her disabled peers was only 3.5%. Her interaction with

peers was at 7.5%, which tied her with one of the typically developing peers. And she had the lowest percentage rate of 81% for "having no social behavior." In fact, five out of six of her "stand out" (positive) behaviors occurred during her social interaction. For example, she offered toys to peers, showed peers how to paste a rectangle on paper, played a computer game with a friend and constantly talked to adults and peers during free play. She was the initiator of an activity for a remarkable 25.8% of the time, which was much higher than the average 14.6% maintained by children with disabilities in her class as a whole.

Three girls are sitting in front of the furniture from the house area saying that they're going to church. Again, Mary includes herself in the group by pulling over a rocking chair and saying, "I going church"... She sits there momentarily but then joins Lani's (the special education teacher] group again. After a few minutes, Mary discovers that Tonya has taken over her chair. She tells her to get up. Tonya does, but after Mary sits down, she makes room on her chair for Tonya who sits back down on the corner of the chair. In a few minutes, Mary brings over another chair for Tonya. Mary starts bringing over all the chairs from the house area and putting them in a line. She directs one kid after another to "sit down right here."

The first excerpt is based purely on quantitative data collected by the CASPER over a period of 3 weeks by 2 observers. The second excerpt was a summary of fieldnotes of participant observation taken by a third investigator. The date and time when these data were collected did not overlap, but both captured the same characteristic of the target child.

In other instances, however, triangulation was difficult to achieve due to the differences between the two methods. One such discrepancy that affected efforts to establish direct links between the qualitative and quantitative data had to do with the *a priori* nature of the ecological categories of the CASPER compared to the more "grounded" nature of the categories that emerged from the qualitative description. In the unstructured observations at one of the sites, it appeared that the amount the adults structured the task (i.e., gave instructions for an art project, directed a group play activity that children could later do by themselves, etc.) an/or participated rather than observed, appeared to have important effects on child involvement. Because these emergent categories did not have a one-to-one correspondence to the *a priori* ecological categories of the CASPER, it was not possible to use the quantitative data to achieve triangulation on this question.

Complementarity. Using mixed methods enables one data source and type to complement the other. Qualitative and quantitative methods have different descriptive strengths (Firestone, 1987). While numbers can assess empirical reality more precisely, they are incapable of providing details on the process that lead to a certain kind of situation. Qualitative data, on the other hand, are often rich in process-oriented information. So combining the two can help ensure a more complete understanding of the topic under study.

For example, when we looked at one of the graphs of the CASPER data, we noticed that one of the children with disabilities really stood out. In comparison with her peers, she spent the longest time staying by herself outside a group setting and the least time in circle time, which happened to be the main instructional time each day. While

these numbers tell us something about the participation pattern for this child, we were more interested in finding out why she stayed that way. So we examined the graphs made from Post-CASPER observation notes, the qualitative portion of our data set. We found that all of her six negative behaviors had something to do with her difficulties in staying with a group. This suggested that her problem was not confined to circle time alone, but might have occurred in any of the teacher-directed group activities such as work group, story reading time and even gym class.

An examination of the fieldnotes and teacher interviews further revealed that the child was actually given tacit permission by the special education teacher to leave the group whenever she felt like it. This liberal policy actually reflected the teacher's educational philosophy. She believed that all children should try their best, but if they still could not follow the rules, they should be given time to learn. It is no use enforcing the rules when the children were not ready. The special education teacher said, "I don't judge a child being a model student if they sit with their mouth closed, their legs are folded and they follow directions. I don't agree with that."

While one data type was successfully used on several occasions to elucidate something of the nature of the other data type, there were other instances where the ease of interpretation of one data type was reduced when seen in the light of the other. One set of research questions involved a straightforward comparison of the CASPER data between programs and between groups (children with and without disabilities). One of the advantages of this data that led to the inclusion of this instrument was that it would yield precise measures of program variables that would be objective and comparable across sites. The possession of qualitative data from the same environments, however, gave rise to some doubts about the meanings of CASPER findings that might not have existed had a purely quantitative study been conducted.

For example, one of the Post-Casper observations noted that during the CASPER observation session the teacher had a nondisabled peer accompany a child with a disability to hang up his coat. The children began discussing the child's picture in his cubby. The teacher came over and helped them elaborate the discussion by going to each of the cubbies and naming and describing the pictures of all the children. As they became engaged in this activity the teacher left the center, but continued to monitor it from a different location. The two children eventually moved from the cubbies to the book center where they continued the same kind of interaction around the pictures in the books there. The CASPER totals for the observation would lead one to believe that more peer interaction occurred when children were alone and the critical role of the teacher would be lost. There were other cases where the CASPER codes were the same but the function of the episode was very different. In one classroom, field notes showed that toileting, handwashing and toothbrushing were conducted during ongoing free play activities and all children participated in turns. In another program, the children with disabilities conducted these activities after the other children had finished cleaning up and left for recess. These events would appear to be the same in the cumulative CASPER data despite the different effects it may have had on the opportunities for

social interaction and perceptions of the children involved.

It was possible to match these data on a case by case basis in such a way as to achieve complementarity for our case studies, but when the CASPER data is merged across programs, knowledge obtained through qualitative means makes interpretation of the quantitative data less, rather than more, straightforward. With regard to the two examples presented here, we must ask what any ultimate differences in adult participation or time spent in self help activities really means, in a way we would not have had any knowledge of the sequential and contextual factors afforded us by our collection of qualitative information.

Initiation. As expected, our two data types did not always corroborate or complement each other. Instead, they sometime seem to contradict each other. Whenever this happened, we tried to go beyond the data itself by looking at its sources, the context under which the data were collected, and the methods by which they are collected.

In our interview with teachers in one program, three out of four teachers spoke highly of Mary, the previously-mentioned child with special needs. Sociable and sensitive, this child played and made friends with everybody in her class. The teachers especially loved the way Mary went around hugging her peers each day before she left for home. They considered Mary a role model to other children for showing love and being nice to friends. They thought Mary was the most popular child in the class. The special education teacher even wrote on the friendship survey that Mary's disability did not interfere at all with her ability to make friends.

But when we looked at the quantitative data in the peer rating graph, we saw almost the exact opposite of what the teacher said. Mary received the lowest score in her class, meaning she was the least popular child.

This apparent disparity can be traced to the very source of the data. Our interview data all came from adults, whereas the Peer Rating data came from children. So the discrepancy was actually between the perception of adults and that of children.

This school was located in a low-income, high-crime area where drugs and violence were not uncommon. One of the on-going themes of the school was to teach children the value of loving and caring of others. When Mary hugged others, the teachers perceived her acting out the very value system they were trying to instill among their students. As one teacher put it:

> With Mary showing that type of love to them and doing this with them all the time,it teaches them that yes, you can be this way. You don't have to be all hard and everything. You can love somebody. It's OK. And Mary lets them know this.

The children, on the other hand, did not perceive things the same way as their teachers. Rather than feeling loved by Mary, they thought Mary was spitting on them

because she had a serious drooling problem. Besides, Mary was tall and strong and did not know her own strength. So when she got too close to people, as she often did, she could easily hurt her peers. So most of the children did not want to play with Mary, even though they could tolerate her. This example shows that what adults thought to be the facilitator of inclusion were actually the barriers in the eyes of the children. The discrepancy between qualitative and quantitative data lead to a new understanding.

Family Studies Example

ECRII is conducting a series of studies with families to obtain their perspectives on inclusion. The studies investigate the decision-making process leading to an inclusive placement, their perceptions of the child's program, and participation in inclusive activities in the community. This section of the paper focuses on comparing data from two separate family studies in one of the 16 ECRII programs: (a) face-to-face, in-depth interviews that were part of the ecological systems study, and (b) a telephone survey of a larger, representative sample of families using the same program. The interviews were conducted to obtain in-depth information on a small sample of families using the program, while the survey was used to determine how generalizable our findings from the ecological systems study were to other families using the program.

Program Context

The context is a large, county-wide school district that offers preschool inclusion through community-based placements in child care centers and preschools for 3- to 5-year-old children with disabilities. This community-based option was offered for the first time during the 1994-95 school year, the year that we collected data for the ecological systems study. Typically one or two children with delays or disabilities are placed in a regular classroom with typically developing children.

Special education services are provided to the children through an itinerant collaborative model. The early childhood special education (ECSE) teachers and related services professionals (speech, physical and occupational therapists) work with the classroom early childhood teacher to systematically embed the child's IEP (Individualized Education Program) goals in ongoing classroom activities and routines. Special services are usually provided to the child in the classroom. The ECSE teacher and therapists typically work directly with the child in the classroom as well as collaborate with the classroom teacher and related services personnel on meeting the child's IEP goals.

Interview Data

In-depth, face-to-face interviews were conducted with the parent(s) of five children with disabilities and two typically developing children. A semi-structured interview guide was used. The protocol asked about the child, the child's program and service history, the decision making process about the program, perceptions of the program, as well as the child's peer relationships and participation in family and

community activities. The interviews were audiotaped and transcribed. Families were paid $25 for their participation in the interview sessions.

Survey Data

The survey questionnaire was administered through a telephone interview conducted with the parent or primary caregiver. The survey instrument consisted mainly of precoded close-ended questions. The questionnaire is divided into five sections and covered this information: (a) demographic information on the child and the child's disability; (b) the child's current and previous programs; (c) decision-making about the child's program and educational goals, services that the child receives, sources of support for the family, and the parent's perspective on what is important in the child's program and recommendations for program improvement; (d) demographic information on the family and community; and (e) the child's participation in activities outside the school program, sources of friendships and parent's satisfaction with the child's peer relationships, and perceived limitations on the child's participation in community activities.

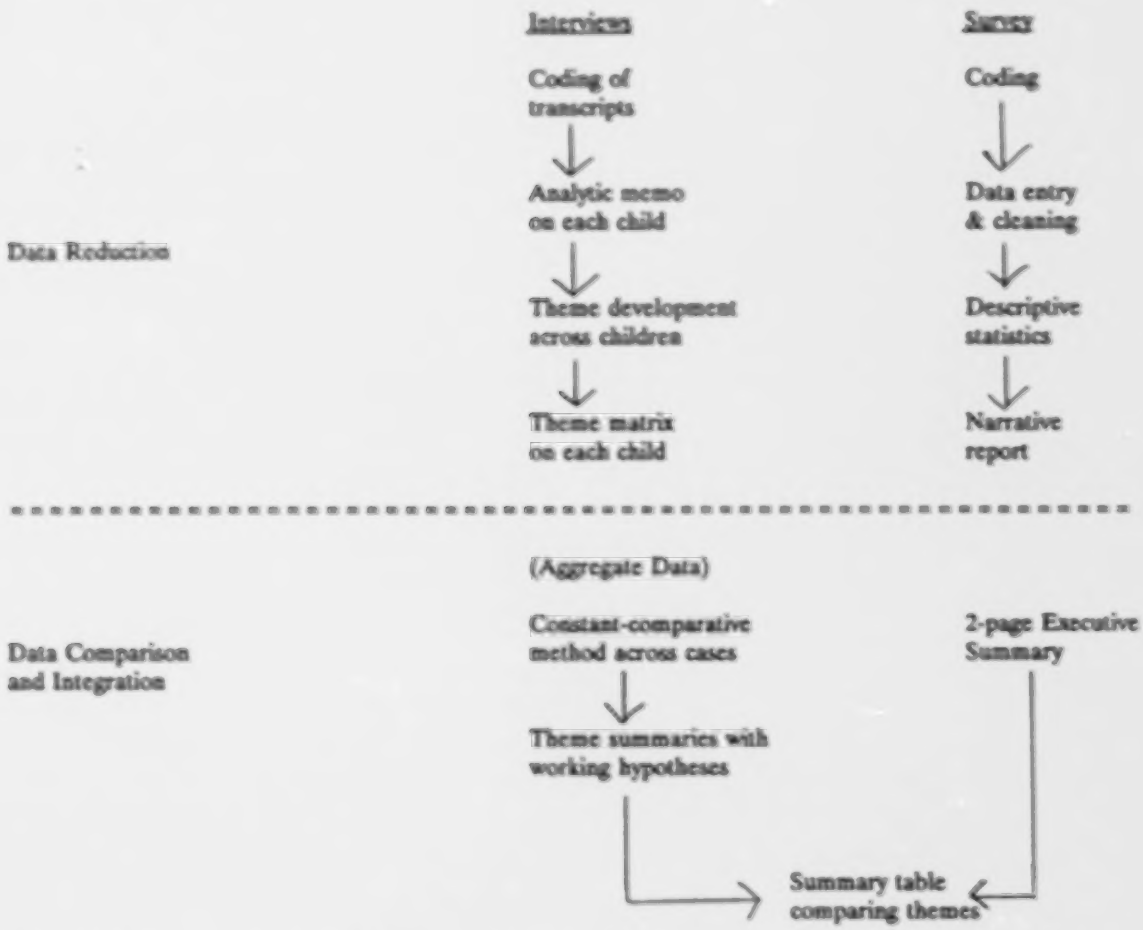
The target population for the survey was the families using community-based child care centers or preschools. The research office prepared a recruitment letter with a consent form that was addressed and mailed by the school system preschool office. When the school system received the consent, it released the family's name and contact information to the research office. Research staff scheduled the telephone interview appointments with the parent, and sent a copy of the questionniare for the parent to preview and follow during the actual interview. Of the 68 eligible families using the program at that time, 34 consented to participate in the survey and 28 actually completed the telephone interview, resulting in a response rate of 41%. Families were paid $10 for their participation. The respondents were representative of the population of families using the program on demographic characteristics (e.g., ethnicity, family composition and SES, and parent's education level) and on the range and types of disabilities.

Data Analysis

The framework for the analysis and comparison of the family interview and survey data is presented in Figure 2. The process followed is different from the classroom data analysis because that analysis effort involved using and comparing different types of measures and data sources (e.g., children, teachers) on the same group of seven children. In contrast, the two types of family measures were administered to different families using the same program. The seven families with whom we conducted face-to-face interviews were not included in the survey sample.

[Insert Figure 2]

Figure 2. Analytic Framework for Family Qualitative and Quantitative Data



Data Reduction

The members of the site research team independently coded different interview transcripts, and prepared an analytic memo on each of the seven children about issues related to inclusion. After sharing each summary memo, the research team developed a list of eight themes for further analysis. Data were further reduced by preparing a theme matrix on each child. In this step, we displayed summary information we had on each theme for the child. This type of data display facilitated comparison and aggregation of individual child information.

Analysis of the telephone interview data proceeded through the steps of coding, data entry and cleaning, and production of descriptive statistics common to survey

research methods. The results were presented in a narrative report with a two-page Executive Summary, which was disseminated to the participating school system and families who requested the survey results.

Data Comparison and Integration

We used the constant-comparative method to continue analysis of the qualitative data from the seven cases. From the theme matrices, we combined information across the cases and discussed working hypotheses for each theme. Negative case examples were used to refine, and sometimes to qualify, the interpretations we were making. We developed a one-page summary with working hypotheses on each theme.

At this point, we had summary data for each method in a different form: a two-page Executive Summary for the survey data, and the theme summaries for the interview data. To compare this information more easily, the summary data were displayed in a table format organized by themes. Table 2 presents a sample of summary data on six of the eight themes from the interviews, organized by the theme names.

[Insert Table 2 here]

Having described the analytic process for these two types of family data, we now explain how the purposes of development, expansion, and complementarity played out in our analysis. Examples of substantive findings are presented for the sake of illustration of methodological issues (additional information on specific findings is available in Marquart, 1996).

Table 2. Comparison of Information from Interview and Survey Data

Theme	Face-to-face Interview	Telephone Survey
1. How and why child was placed in program	Two aspects of decision: (1) Community-based "inclusive" option (2) Specific child care center Factors affecting choice: • Visited and liked classroom & teacher • Convenience of location • Flexibility in hours • Good reputation of center • Concern if center would accept child because of behavior	Parents' most important reasons for using program: • Offers special educ. services or therapies • Provides opportunities to learn • Provides opportunities to play with other children
2. Program's appropriateness for child	In successful placement, there's a "match/fit" that occurs between child's and family's needs & program. Factors affecting "match/fit": • Acceptance by staff & children • Likes activities and routines for child • Child likes program • Sees benefits or specific improvements	• 90% said **very important** for child to be in inclusive program • 80% indicated child **usually/always** receives special services needed • 86% were **satisfied** with way in which child's educational goals were made
3. Meaning of inclusion	After inclusive option became available, parental shift in expectation from "Why should child be placed in inclusive option?" to "Why not?" • Expectation that child will be with typical children because always has been • Belief that staff has inclusive attitude and personal investment in inclusion • Importance of role models & learning from typical children • Benefits to child with disability and typical children in class	

4. Peer relationships	• Program is primary setting in which peer interaction & friendships (other than with siblings) occur (program is where preschoolers spend significant part of day with other children). • 5 children have peer relationships both outside of & at their program. 2 children lacked specific social interaction skills to develop relationships. • When disability is a limiting factor in developing relationships, it limits more in access to peers rather than the quality of interactions with peers.	• Families were **more satisfied** with opportunities for child friendships **at the program** than outside the program • Child plays with other children with disabilities **slightly more outside the program** than at the program
6. Helpful and non-helpful players	Characteristics of helpful players: • Consistent presence over time & settings • Personal investment in child • Provides different types of support • Dependable source of information about child Characteristics of non-helpful players: • Minimize/disregard family concerns • Inadequate communication	The **most helpful** supports were: • Other family members at home • Child's teachers • Other professionals in community & at child's program
7. Child's participation in family & community activities	Factors that affect participation: • Parent's safety concerns about child • Parent's perception of what is expected of child's behavior • Lack of other young children in immediate neighborhood • Family's own style, schedule and how it participates in the community • An extended family system was so strong a part of family's culture that family did not need/choose to participate much in the community • Young age of children	Limitations on participation: • Child's language skills • Family's schedule and time constraints • Attitudes of other towards child's disability • Child's behavior • Lack of other children to play with in neighborhood

Development. Previous mixed-method work has used interview and survey methods sequentially or for a development purpose (Greene et al., 1989). We used multiple methods in an iterative, sequential process to develop subsequent data

collection activities and to expand interpretation of data collected. That is, we began our investigative process with in-depth interviews with a small sample of families. The information collected from those interviews helped in the conceptualization of the content domain of the survey questionnaire that was administered to the broader sample of families. In turn, the information from the questionnaire opened up yet new avenues to explore in follow-up interviews with families. This circular, iterative process enhanced our ability to build on and expand the understandings that we were developing. It allowed us to incorporate new learnings and working hypotheses into subsequent data collection activities to make more complete interpretations of our data.

Expansion. Expansion extends the breadth of inquiry by using different methods for different inquiry components. Different methods allowed us to ask different kinds of questions and get different types of information from families. On surveys it is easier to use Likert-type scales to obtain measures of satisfaction, importance, frequency, and so on. For example, it was important in our study to obtain a quantifiable measure of how important an inclusive program was to families, the extent to which the child receives needed special services, and families' satisfaction with the decision making process about their child's educational goals. As shown in Table 2 (section 2), high proportions of families believed an inclusive program was important for their child and were satisfied with the process for determining the child's educational goals. A slightly lower proportion indicated that the child usually or always received the special services needed.

The open-ended interviews, on the other hand, allowed us to understand systems and process interaction variables and underlying reasons for families' perceptions. For example, we could explore the decision making and program placement process for individual families. This information led us to develop a working hypothesis about the "match/fit" that occurs between the child's and family's needs and the program in a successful placement (see Table 2, sections 1 and 2). When we were able to explain the dynamic of this process, the separate pieces of information about what is important to families in the program obtained from the interviews and the survey began to fit together holistically. This holistic understanding is one of the purposes and benefits of qualitative methods, but it also enhanced our interpretation of our quantitative data.

Some types of information can best be captured by one method and are not appropriate or feasible through the other. For example, one of the institute research questions focuses on participants' definition or meaning of inclusion. This type of question can not be answered in a meaningful way through a written or telephone survey item. As shown in Table 2, section 3, we obtained information on participants' meaning of inclusion for their child through the in-depth interviews. The face-to-face format allowed us to ask about inclusion in the context of the child's program and the family's circumstances, with opportunities for probing and eliciting more explanatory information. This is also a highly inferential theme and draws from other information obtained during the interviews. (This was also true for the two other themes omitted from the table, *Communication with direct service providers,* and *Expectations for the child.*)

Complementarity. The use of multiple methods allowed us to measure overlapping but also different facets of the phenomenon of inclusion, giving us an enriched, elaborated understanding of the phenomenon. For example, on the survey, we systematically asked families how helpful different informal and formal sources of support had been to them (see Table 2, section 6). In our interviews, families referred to individuals who had been supportive to them in meeting their children's needs. It was notable who they mentioned (including the bus driver!), as well as who they neglected to mention (our small sample never mentioned the related services therapists who worked with their children, for example, and from our classroom observations we knew why). But the survey respondents considered the related services personnel very helpful. Without the survey information, we would have drawn incorrect conclusions about the role of related services professionals in the child's program.

From the interviews, we also obtained additional information about characteristics of helpful and non-helpful players to the family (Table 2, section 6). Helpful players had a consistent presence in the family's life over time and settings, had a personal investment in the child, provided different types of support, and were a dependable source of information about the child. Non-helpful players were seen as minimizing or disregarding family concerns and providing inadequate communication. In turn, these characteristics contributed to our understanding of why families rated as most helpful other family members, the child's teachers, and other professionals at the program and in the community.

The interview and survey responses about the child's participation in family and community activities also served a complementarity purpose (Table 2, section 7). From both methods we obtained similar information about limitations to participation, such as lack of other young children in the neighborhood, the family's schedule and time constraints, and the child's behavior. From the survey, we learned that the most frequently reported limitation was the child's language skills, which did not arise in our interviews with the small sample of families. From the interviews, we learned first-hand that the family's own style and way of participating in the community was perhaps the most important determinant of the child's participation, and that an extended family could meet the family's needs so well that it did not need or chose more extensive participation in the community. That type of in-depth information could only be gained through more extensive contact with families.

Further Data Integration

The next steps in data integration will proceed on several levels. First of all, the survey results from this program will be aggregated with survey information from the other programs within our site and across the institute sites. Similarly, the eight themes initially developed will be "tested" by continuing to apply the constant-comparative method across other programs within site and across site. This qualitative analysis needs to be done carefully so as to preserve the meaning of the theme in the program context, but still to be able to undercover common themes across families. These initial themes

will surely be refined and perhaps be expanded as analysis continues across programs. At that stage, we will need to determine which types of further integration are meaningful and feasible.

Conclusion

This paper has dealt with how qualitative and quantitative methods were mixed for data collection, analysis and interpretation within classroom and family studies that are being conducted to investigate the phenomenon of inclusion from multiple perspectives. The data from each method were used to truly inform the other, resulting in an understanding of inclusion that is "more than the sum of the parts."

The analytic steps of data reduction, comparison, and integration represent an ongoing, iterative process with mixed methods. As the research team proceeds with integration of data across programs, we will need to recycle back and do further types of data reduction and comparison. With the larger number of cases that will be aggregated, we will also transform some of the qualitative information into numbers to determine the commonalities across cases while preserving the discrepant information from "negative" case examples and their context.

The Greene et al. (1989) framework provides a useful framework for conceptualizing research designs that employ multiple methods. However, we found that the five purposes defined by Greene et al. do not necessarily represent discrete, mutually exclusive categories. For example, we found that it is difficult to distinguish aspects of the initiation and expansion purposes. Also, in mixed methods studies as complex as the ones we are conducting, we found that issues related to purpose, design, and analysis are often confounded when attempting to apply the five categories. That is, these categories may take on different meaning when applied to purpose, design, and analysis issues in a mixed methods study. In fact, we may have confounded them in our discussion of the classroom and family examples. We believe that in future work it would be useful to test out this notion by applying the separate categories to purpose, design and analysis components of mixed method studies.

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